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Hairy Ears among the Pahira

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The Pahira is a primitive community of about 1300 souls, inhabiting the hilly tracts of the districts of Purulia, Singhbhum and Ranchi, India. They live in small hamlets in separate or peripheral areas of multitribal villages. The population may be divided into two geographical groups, one (Northern Pahira) living in the district of Purulia and the other (Southern Pahira) in the districts of Singhbhum and Ranchi. Intermarriage is now very rare between these two groups although it appears that they are derived out of a common ancestral population.

The genetic behavior of hypertrichosis of the ear rim is yet controversial. Gates (1960), Gates and Bhaduri (1961), Gates et al. (1962) and Dronamraju and Haldane (1962) propose the theory of Y-linked inheritance *with occasional failure of penetrance*; Slatis and Apelbaum (1963) accept the above view, on the whole, but propose, in addition, incomplete penetrance until a late age, while Stern (1957), Sarkar et al. (1961) and Stern et al. (1964) fail to find convincing evidence in support of the Y-linkage hypothesis. Again, hairy ears in females (Gates and Vella, 1962; Sarkar and Ghosh, 1963; Gates and Bhaduri, 1961) may be due to a different kind of factor than those in males.

While the genetics of hypertrichosis of the ear rim remains so controversial, it is felt that a study concurrently of hair growth (longer, darker and thicker than lanugo) in other parts of the ear may be interesting. Slatis and Apelbaum (1963) have already shown association between hair growth in the ear rim and that in the tragus and certain other parts of the body. Gates and Bhaduri (1961) also refer to the need for the study of the general hirsuty of the body and its relation with that of the ear rim. As such the hairiness of the lobe, tragus and antitragus among the Pahira has been dealt with in this paper in addition to that of the ear rim. Besides, the anthropological significance of hairy ears has been discussed. Gates' (1960) and Gates and Bhaduri's (1961) opinion that it is a characteristic of the Mediterranean race has also been discussed.

Material and methods

Altogether 786 Pahiras were examined. Of these, none of the 53 females (aged 20 or above), 31 males (aged below 20) and 36 females (aged below 20) in the Northern Pahira group and 151 females (aged 20 or above) and 123 males (aged below 20)

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and 124 females (aged below 20) in the Southern Pahira group show the trait. The present paper is thus based on 74 (Northern Pahira) and 194 (Southern Pahira) males aged 20 or above.

The Northern and the Southern Pahira have here been treated separately because they form two separate mating groups.

Tab. 1 gives the frequency of hypertrichosis of the ear rim by age and grade. It is apparent from both the samples that the incidence of the trait increases with age in the frequency of affected individuals as also in the degree of affection. The overall frequency of affaected individuals is roughly similar in both the samples, the difference being statistically insignificant ($\chi^2 = .386$, $P = .70 - .50$). When the age groups are considered separately, however, there is a considerable difference between the two samples, except in the age group 20-29.

Lobe, tragus and antitragus follow the same pattern (Tab. 2) in showing a gradual increase in the value of " fraction affected " with increasing age. Of the four sites showing hairs on the ear, the rim seems to be the most frequently affected in the total sample as well as in the individual age groups while the antitragus the least. The tragus and the lobe behave interchangingly.

In Tab. 3 the association between hypertrichosis of the ear rim and that of lobe, tragus and antitragus has been shown. Affected lobe, tragus and antitragus are significantly more frequent in the " rim affected " group.

The three pedigrees (Figs. 1-3) are collected from the Southern Pahira. Fig. 1 shows two brothers, one (I_1) with affected rim, lobe, tragus and antitragus and the other (I_3) with only the lobe affected. Fig. 2 shows a father (I_1) with affected rim, lobe and tragus with two aged sons, one (II_1) having only the lobe affected but rim unaffected while the other (II_3) having affected rim, tragus and lobe. Fig. 3 shows two aged brothers (I_2 & I_5) having affected lobe, tragus and antitragus but not the rim; the elder brother (I_2) has two sons (II_6 & II_9) with only the rims affected while the younger (I_5) has a son (II_{19}) with affected lobe but not rim.

In Tab. 4 the Pahira data are presented along with a number of other Indian populations.

Discussion

In a recent paper Stern et al. (1964) have discussed in detail the genetics of hypertrichosis of the ear rim, and conclude that conclusive evidences in favour of a Y-linked inheritance are still wanting. The present data on hairy ear rims agree with them in the fact that penetrance of the trait increases with age. Its variability in the different parts of the ear, also increases similarly.

Tab. 3 shows a significantly higher frequency of affected lobe, tragus and antitragus in the " rim affected " group than in the " rim unaffected " one. This probably suggests that hairiness of the ear as a whole is controlled by the same genotype. The pedigrees shown in Figs. 1-3 also suggest that hair growth in the rim or any other parts of the ear may be the variable expression of one and the same genotype. Several kinds of variability have already been found in the hairiness of the rim alone.

Tab. 1

Age group	Northern Pahira						Southern Pahira					
	He				+	Fraction He	He				+	Fraction He
	Gr. 1	Gr. 2	Gr. 3	Total			Gr. 1	Gr. 2	Gr. 3	Total		
20-29	1	—	—	1	15	.063	1	2	—	3	58	.049
30-39	1	1	—	2	22	.083	9	5	3	17	43	.283
40-49	—	—	—	—	17	.000	6	4	1	11	25	.306
50-59	5	2	—	7	4	.636	7	1	—	8	12	.400
60-69	1	3	1	5	—	1.000	5	3	—	8	6	.571
70-	1	—	—	1	—	1.000	1	1	—	2	1	.667
Total	9	6	1	16	58	.216	29	16	4	49	145	.253

χ^2 (Northern Pahira × Southern Pahira) = .386; P = .70-.50

* No individual belonging to Grade 4 & 5 has been found.

Tab. 2

Age group	Northern Pahira									Southern Pahira								
	Lobe			Tragus			Antitragus			Lobe			Tragus			Antitragus		
	Affected	Unaffected	Fraction affected	Affected	Unaffected	Fraction affected	Affected	Unaffected	Fraction affected	Affected	Unaffected	Fraction affected	Affected	Unaffected	Fraction affected	Affected	Unaffected	Fraction affected
20-29	—	16	.000	—	16	.000	—	16	.000	2	59	.033	—	61	.000	—	61	.000
30-39	1	23	.042	—	24	.000	—	24	.000	11	49	.183	7	53	.117	4	56	.067
40-49	2	15	.118	5	12	.294	—	17	.000	10	26	.278	4	32	.111	1	35	.028
50-59	4	7	.364	3	8	.273	3	8	.273	7	13	.350	7	13	.350	6	14	.300
60-69	2	3	.400	4	1	.800	1	4	.200	9	5	.643	8	6	.571	7	7	.500
70-	—	1	.000	1	—	1.000	—	1	.000	—	3	.000	3	—	1.000	2	1	.667
Total	9	65	.122	13	61	.176	4	70	.054	39	155	.201	29	165	.149	20	174	.103

Tab. 3

	Northern Pahira									Southern Pahira								
	Lobe			Tragus			Antitragus			Lobe			Tragus			Antitragus		
	Affected	Unaffected	Fraction affected	Affected	Unaffected	Fraction affected	Affected	Unaffected	Fraction affected	Affected	Unaffected	Fraction affected	Affected	Unaffected	Fraction affected	Affected	Unaffected	Fraction affected
Rim affected	5	11	.313	7	9	.438	3	13	.188	20	29	.408	16	33	.327	12	37	.245
Rim unaffected	4	54	.069	6	52	.103	1	57	.017	19	126	.131	13	132	.090	8	137	.055

Northern Pahira — Rim × Lobe χ^2 = 6.96, P less than .01; Rim × Tragus χ^2 = 9.66, P less than .01; Rim × Antitragus χ^2 = 7.11, P less than .01.

Southern Pahira — Rim × Lobe χ^2 = 17.51, P less than .01; Rim × Tragus χ^2 = 16.16, P less than .01; Rim × Antitragus χ^2 = 14.26, P less than .01.

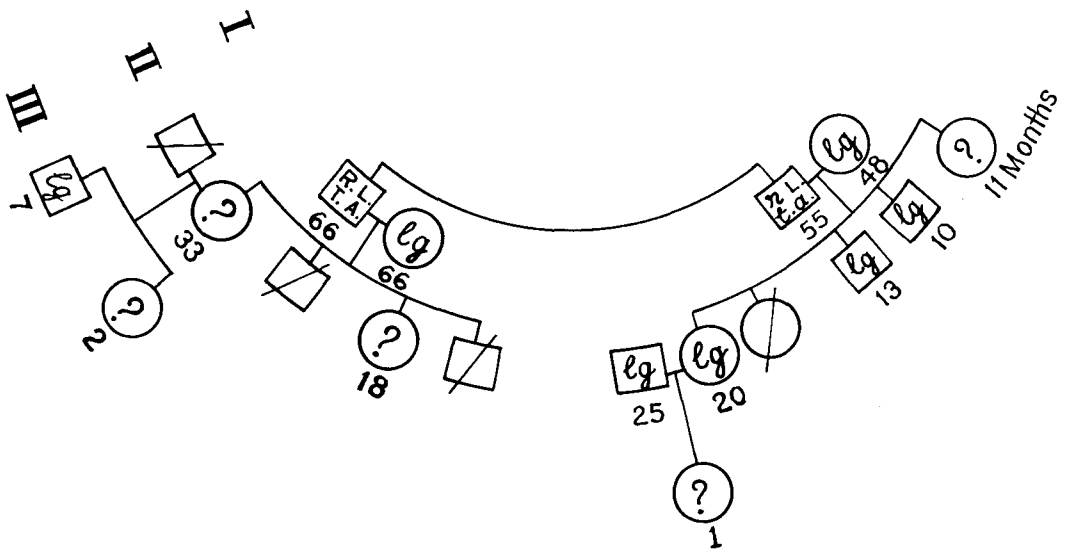

Fig. 1

R. - Rim affected; r. - Rim unaffeted
L. - Lobe affected; l. - Lobe unaffected
T. - Tragus affected; t. - Tragus unaffected
A. - Antitragus affected; a. - Antitragus unaffected
lg. - Lanugo
n. i. - No issue
? - Not examined
/ - Dead

* All individuals except those marked « ? » and « / » were personally examined

As regards the ethnic significance of the trait, Gates (1960) and Gates and Bhaduri (1961) have claimed it to be a characteristic of the Mediterranean race. Gates (1957) has also noted the absence of any hypertrichous ears among 140 Ainus of both sexes. Henry Field (1951) in the course of his anthropometric study in Iraq has published a photograph of a hypertrichous individual. It is however apparent that the ethnic data are too small for any conclusive opinion. Besides, if we assume that man has inherited the trait from his prehuman ancestors (Gates and Bhaduri, 1961 refer to earlier literature describing the trait in certain primates), and that in the absence of any completely isolating mechanism some amount of gene exchange has occurred throughout the course of human evolution between different human populations, it will be difficult to conceive that any trait will occur exclusively in one race in the present day. As a factual demonstration of this latter contention the present data show that it also occurs among the Australoid Pahira. Gates and

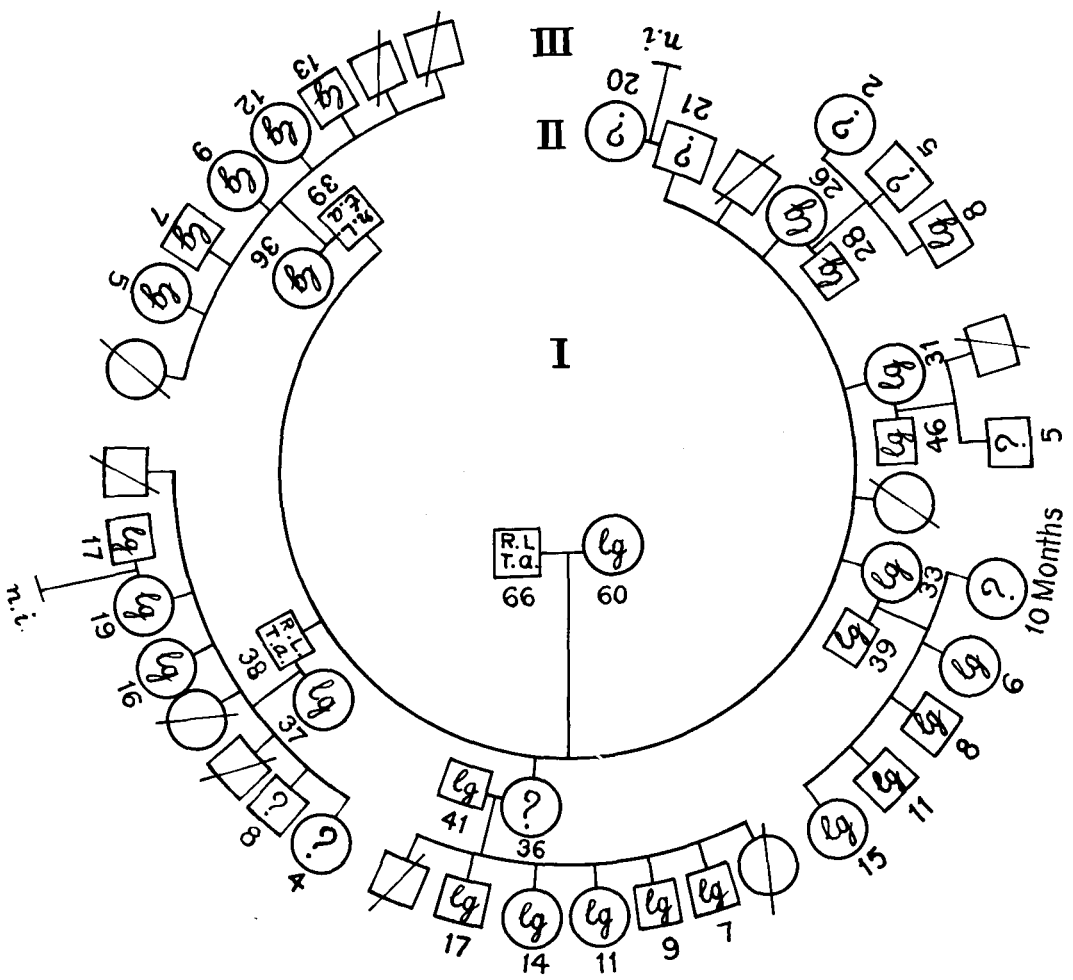

Fig. 2

R. - Rim affected; r. - Rim unaffected
L. - Lobe affected; l. - Lobe unaffected
T. - Tragus affected; t. - Tragus unaffected
A. - Antitragus affected; a. - Antitragus unaffected

lg. - Lanugo
n. i. - No issue
? - Not examined
/ - Dead

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Bhaduri (1961) also refer to a case in an Australian aborgine but they do not treat it with any importance, except suggesting that more Australoids should be studied. Again, if we accept Sarkar's (1958) view that " the present-day Dravidians have evolved from the Veddid type " the occurrence of this trait in the Dravidians of South India would point in favour of its occurrence in a derivative of the Australoid

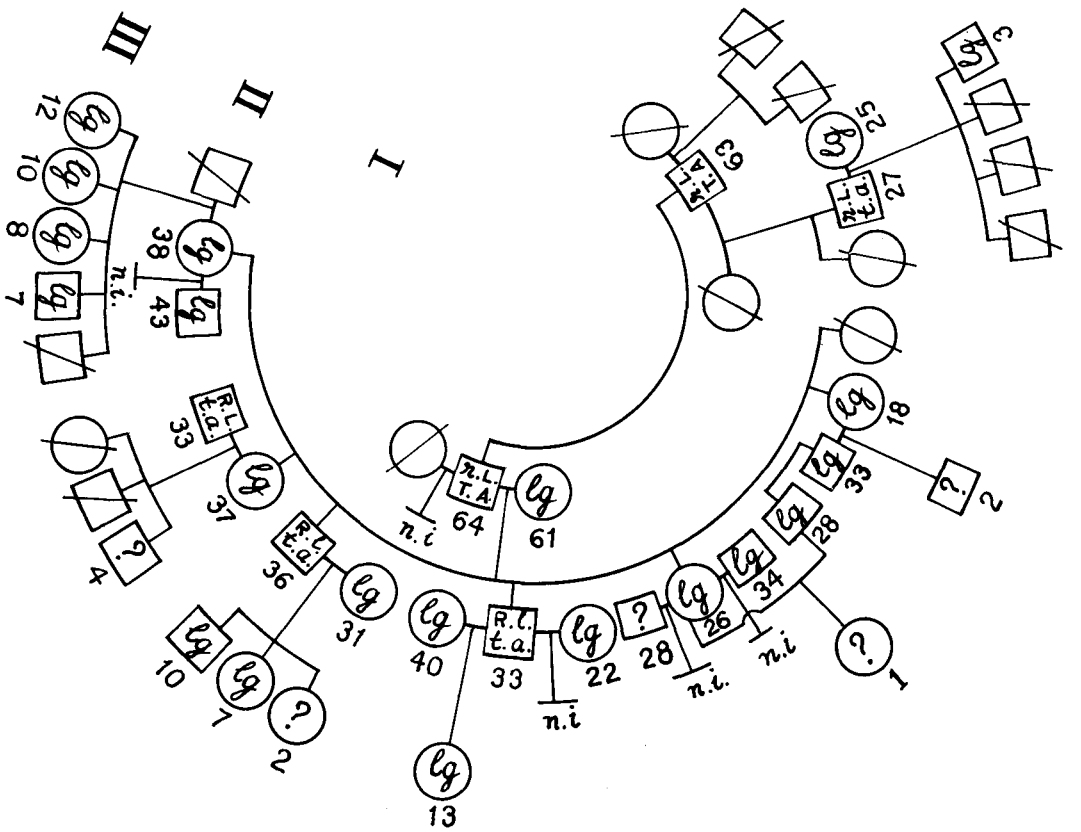

Fig. 3

R. - Rim affected; r. - Rim unaffected
L. - Lobe affected; l. - Lobe unaffected
T. - Tragus affected; t. - Tragus unaffected
A. - Antitragus affected; a. - Antitragus unaffected

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race rather than in an " Eastern extension of the Mediterranean race " as supposed by Gates and Bhaduri (1961). Gates et al. (1962) found among " Lepchas, Bhutias, Tibetan refugees and Totos, which are all Mongoloid in varying degrees, no cases of hairy ears ". One of Gates' co-authors, however, in a recent publication (Cha-

Tab. 4

Population	Fraction He	Investigator
Northern Pahira	.216	Present study
Southern Pahira	.253	
West Bengal	.106	Sarkar et al., 1961
West Bengal	.160	Dronamraju, 1961
West Bengal	.252	Gates et al., 1962
Bengalees	.179	Chattopadhyay, 1964
Jats	.057	
Panjabis	.100	
Andhra	.061	Dronamraju 1961
Andhra	.125	Chattopadhyay, 1964
Madras	.295	
Kerala	.239	

kravartti, 1964) mentions " two individuals with stage 6 (Gates, Chakravartti and Mukherjee, 1962) hairy rim " among the Toto.

Dronamraju's (1961) suggestion that particular frequencies may be characteristic of particular ethnic or geographical groups is a more likely hypothesis. Such inter-group variation will be apparent from Tab. 4. But the use of this trait as an " anthropological marker " (Dronamraju and Haldane, 1962) is only of limited value. The frequency of the trait is known to vary in different age groups. As such, unless the age structure of the populations to be compared are similar, their overall frequencies are not strictly comparable.

Summary

1. Data relating to hypertrichosis of the ear rim, lobe, tragus and antitragus in the Pahira are presented.

2. It has been indicated that (*a*) hypertrichosis of the rim is associated with that of the lobe, tragus and antitragus, and both may be controlled by the same genotype; (*b*) it may not be a characteristic of the Mediterranean race alone; and (*c*) its use as an " anthropological marker " is of limited value.

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RIASSUNTO

Vengono presentati i dati riguardanti l'ipertricosi del padiglione auricolare, lobo, trago ed antitrago nei Pahira. Si dimostra che l'ipertricosi del padiglione auricolare è associata a quella del lobo, trago ed antitrago e che possono essere ambedue controllate dallo stesso genotipo. Si ritiene, inoltre, che tale ipertricosi non sia necessariamente un carattere esclusivo della razza Mediterranea e, ancora, che il suo valore come « marcatore » antropologico sia limitato.

RÉSUMÉ

L'A. présente les données se référant à l'hyperthricose du pavillon de l'oreille, du lobe, du tragus et de l'antitragus chez les Pahira. Il indique (a) que l'hyperthricose du pavillon de l'oreille est associée à celle de lobe, tragus et antitragus et que toutes les deux pourraient être contrôlées par le même génotype; (b) que cette hyperthricose pourrait ne pas être nécessairement limitée à la race méditerranéenne et (c) que sa valeur comme « marqueur » anthropologique est limitée.

ZUSAMMENFASSUNG

Es werden Erhebungen bezüglich der Hypertrichosis an den Ohren bei den Pahira (an Pinna, Ohrläppchen, Tragus und Antitragus) angeführt. Es ergibt sich daraus, daß die Behaarung der Pinna mit derjenigen von Ohrläppchen, Tragus und Antitragus in Zusammenhang steht und daß beide vom gleichen Genotyp bedingt sein können. Man ist außerdem der Ansicht, daß diese Hypertrichosis nicht unbendingt ein Merkmal der Mittelmeerrasse und daß ihre Verwendung als anthropologischer « Anzeiger » beschränkt ist.